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Bactrodesmium pulcherrimum sp. nov. from Ecuador

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Abstract—A new species *Bactrodesmium pulcherrimum*, found on decaying wood in Ecuador, is described and illustrated. The fungus is distinguished by subnapiform to broadly subturbinate (maize kernel-shaped) 1-septate asymmetrical ochreous-brown conidia. Illustrations of *Bactrodesmium novageronense* and *B. simile* and a comparison table of bicellular *Bactrodesmium* species are also provided.

Key words—asexual fungi, freshwater, hyphomycetes, taxonomy, tropics

Introduction

Saprobic dematiaceous hyphomycetes are highly diverse on plant materials in Central and South American tropical forests, where many new genera and species have recently been discovered (Castañeda-Ruiz &

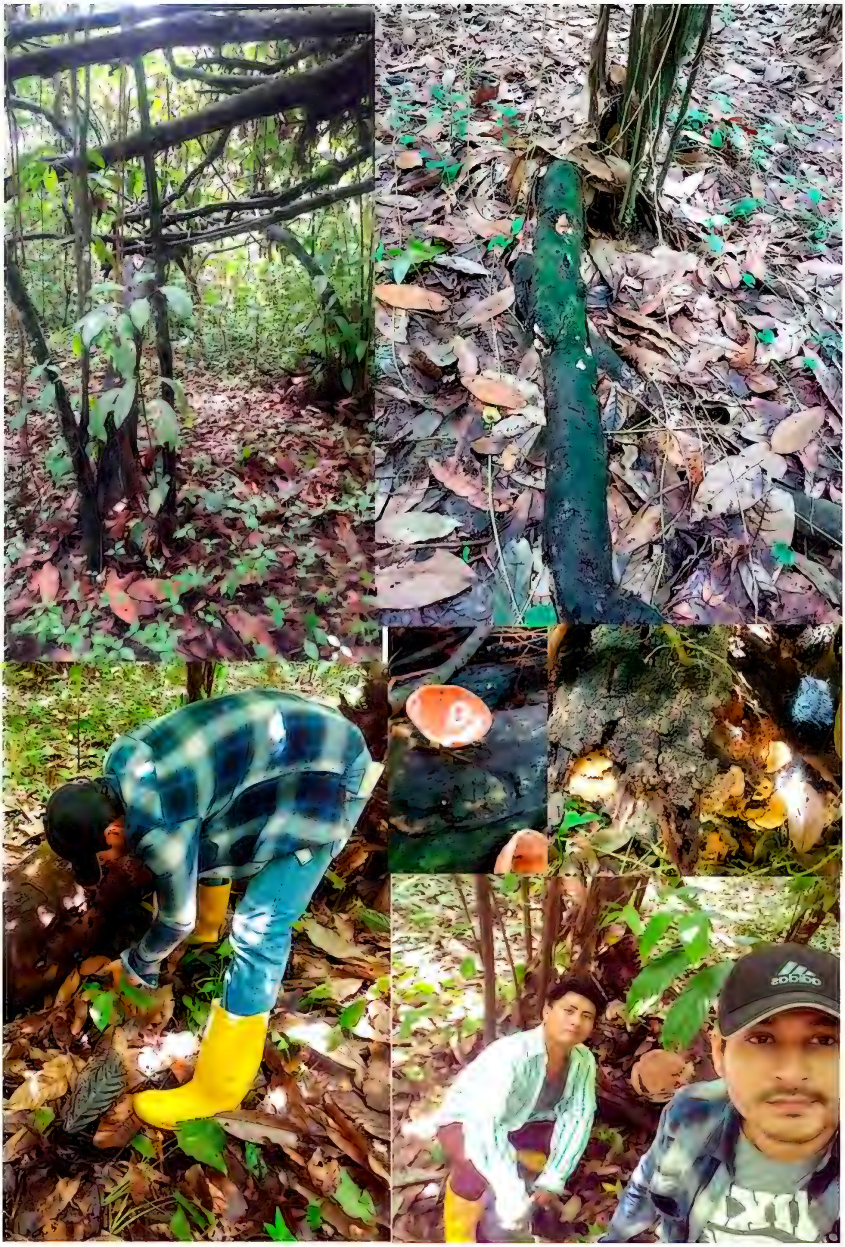

FIG. 1. Cacao plantation, Guayas Province, Ecuador.

al. 2016). During a survey of hyphomycetes associated with plant debris of cacao plantations in the Naranjal, Guayas province, southern Ecuador (Fig. 1), we collected a *Bactrodesmium* specimen that differs remarkably from all previously described species (Hernández-Restrepo & al. 2013, Arias & al. 2016). It is described here as a new species, *Bactrodesmium pulcherrimum.*

Materials & methods

Samples of decaying plant materials were collected and placed in plastic bags for transport to the laboratory, where they were washed, treated according to Castañeda-Ruiz & al. (2016), and placed in humid chambers. Several attempts to obtain this species in pure culture were unsuccessful after using a flamed needle to transfer conidia to corn meal agar mixed 1:1 with carrot extract and incubating at 25 °C. Mounts were prepared in PVL (polyvinyl alcohol, lactic acid) and measurements were made at 1000× magnification. Microphotographs were obtained with an Olympus BX51 microscope equipped with bright field and Nomarski interference optics. The type specimen is deposited in the Herbarium of Universidade Federal de Pernambuco, Recife, Brazil (URM).

Taxonomy

Bactrodesmium pulcherrimum R.F. Castañeda, F. Espinoza & D. Sosa, **sp. nov.** Fig. 2

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Differs from *Bactrodesmium simile* by its hemispherical conidial basal cells and maize kernel-shaped conidia.

Type: Ecuador, Guayas Province, Guayaquil, Naranjal, 02°41′26″S 79°36′46″W, on decaying wood of *Theobroma cacao* L. (*Malvaceae*), 7 March 2018, F. Espinoza & M. Vera (**Holotype**, URM 91287).

Etymology: Latin, *pulcherrimum*, meaning most beautiful.

Conidiomata on the natural substrate sporodochial, scattered, pulvinate ochreous to brown, ≤20 µm diam. Mycelium superficial and immersed composed of septate, branched, hyaline, smooth hyphae, 2–3 µm diam. Conidiophores macronematous, mononematous, unbranched or with short lateral branches scorpioid after 1–2 sympodial elongations of the conidiogenous cells, erect, flexuous, 2–3-septate, hyaline, smooth, 30–80 × 4–5 µm. Conidiogenous cells monoblastic, integrated or discrete, cylindrical or slightly clavate, sometimes inflated near the conidiogenous loci, determinate or indeterminate with sympodial extensions, hyaline, 10–18 × 4–7 µm. Conidial secession rhexolytic. Conidia solitary, acrogenous, sometimes acropleurogenous, broadly obovoid to subnapiform, 1-septate, ochreous-brown, smooth, 18–24 ×

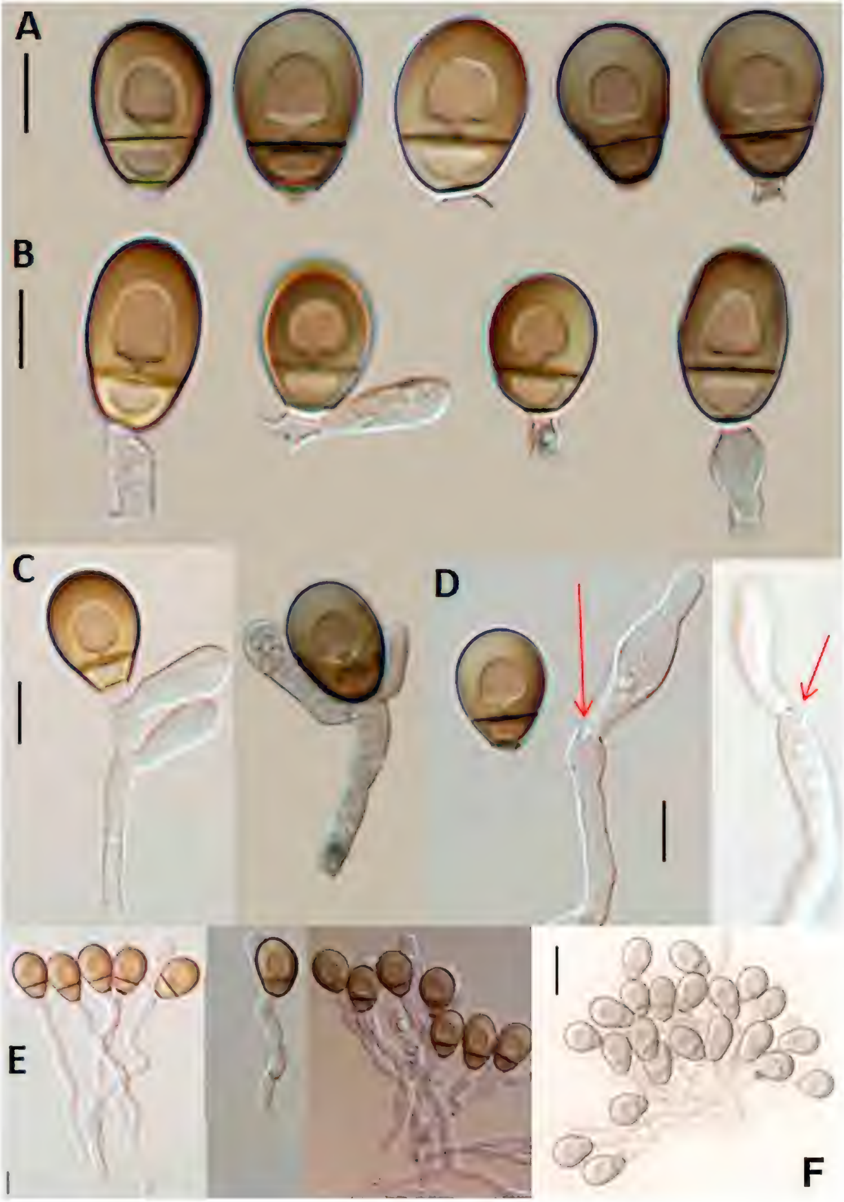

FIG. 2. *Bactrodesmium pulcherrimum* (holotype, URM 91287): A, B. Conidia with a basal frill after rhexolytic conidial secession and a detached conidium with a lateral extension of the conidiogenous cell; C. Conidiogenous cells with lateral sympodial extensions, attached conidia; D. Detached conidium and conidiogenous loci indicated by arrows; E. Conidiophores, conidiogenous cells, and conidia; F. Sporodochium. Scale bars: A–E = 10 µm; F = 20 µm.

13–19 µm, asymmetrical, with a basal cell hemispherical, 5–7 × 10–12 µm, and an apical cell semi-elliptical or subglobose, 12–17 ×13–17 µm, with markedly pale ochreous-brown lumina.

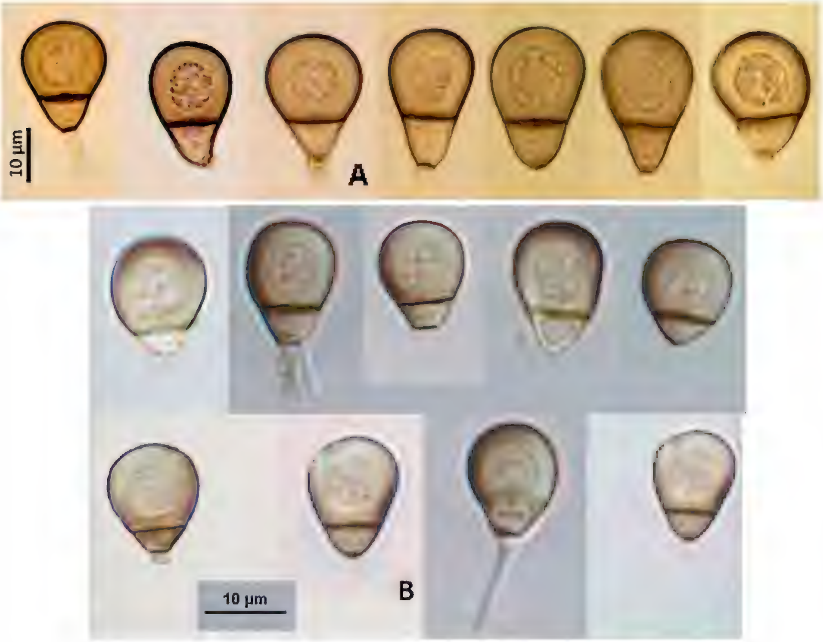

FIG. 3. ***Bactrodesmium simile*** (holotype, XAL CB1689): A. Conidia with a basal frill after rhexolytic conidial secession. ***Bactrodesmium novageronense*** (holotype, INIFAT C84/101-2): B. Conidia with a basal frill after rhexolytic conidial secession. Scale bars = 10 µm.

NOTE: *Bactrodesmium simile* Arias & al. (FIG. 3A, TABLE 1) is similar to *B. pulcherrimum* in the conidial sizes, but *B. simile* has broadly pyriform, obovoid, golden brown to pale olivaceous-brown conidia, with a basal

TABLE 1. Comparison of the 1-septate *Bactrodesmium* species.

SPECIES	CONIDIAL MORPHOLOGY			REFERENCE
	COLOR	SHAPE & SIZE (µm)	BASAL CELL (µm)	
B. novageronense	Pale brown	Obovoid to subglobose 8–13 × 7–10	Hemispherical 3–3.5 × 5–7	Castañeda-Ruiz 1985
B. pulcherrimum	Ochreous-brown	Broadly obovoid to subnapiform 18–24 × 13–19	Hemispherical 5–7 × 10–12	This paper
B. simile	Golden brown to pale olivaceous brown	Broadly pyriform to obovoid 19–24 × 12–16	Cuneiform or obconical 7.5–11 × 5–8.5	Arias & al. 2016

cell cuneiform, 7.5–11 × 5–8.5 µm (Arias & al. 2016). *Bactrodesmium novageronense* R.F. Castañeda (Fig. 3b, Table 1) is similar to *B. pulcherrimum* but can be distinguished by its smaller conidia (8–13 × 7–10 µm; Castañeda-Ruiz 1985).

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